Oral Science International 11 (2014) 1–7

Oral Science International

journal homepage: www.elsevier.com/locate/osi

Review

Oral lichen planus: Malignant potential and diagnosis

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ARTICLE INFO

Article history:
Received 29 October 2013
Received in revised form
14 November 2013
Accepted 17 November 2013

Keywords:
Oral lichen planus
Oral lichenoid lesions
Differential diagnosis
Lichenoid dysplasia
Malignant transformation

ABSTRACT

Oral lichen planus (OLP) is one of the most common diseases of the oral mucosa. Clinically, it has specific and clearly identifiable features; bilateral symmetric presentation showing a lace-like network of fine white lines (known as Wickham's striae) is an essential element of OLP even if the lesion exhibits a mainly atrophic and erosive pattern. There are various lesions that resemble OLP clinically and histologically. These lesions are widely referred to as lichenoid reactions or lichenoid lesions (OLLs). OLLs include contact hypersensitivity to dental materials, drug-induced lichenoid lesions, lichenoid reactions in chronic graft-versus-host disease, and other lesions that resemble OLP. The risk of malignant transformation of OLP is the subject of ongoing debate in the literature. Some authors have suggested that only OLLs, but not OLP, are of a premalignant nature and thus, should be categorized as "other dysplastic conditions." Contrary to this suggestion, many cases of oral squamous cell carcinoma (OSCC) developing in patients with OLP presenting with no epithelial dysplasia have been reported. In addition, it has been reported that multiple events including multifocal dysplasia and/or OSCC subsequently occurred in some patients with OLP, suggesting possible field cancerization in OLP. In this paper, differential diagnosis between OLP and OLLs and their malignant potential are reviewed.

Contents

1. Introduction

Various white-and-red lesions occur in the oral mucosa, including leukoplakia, erythroplakia, candidiasis, geographic tongue, lichen planus, lichenoid lesions, and others. Oral leukoplakia and oral erythroplakia are well known to be precancerous lesions [1,2], while the malignant potential of oral lichen planus (OLP) and/or oral lichenoid lesions (OLLs) has been the subject of much discussion in the past few decades [3–45]. Since the clinical and histological features of these white-and-red lesions are similar, differential diagnosis of them is important.

Lichen planus is a chronic inflammatory mucocutaneous disease associated with immune-mediated pathogenesis [3–6]. It most commonly affects the oral mucosa, but can involve other sites such as the skin, genital mucosa, scalp, and nails [4–8]. Most cases of OLP do not involve lesions at other sites. The prevalence rates of OLP vary from 0.5% to 2.6% of the world population [3–6].

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http://dx.doi.org/10.1016/S1348-8643(13)00030-X

The mean age of OLP onset is the fifth decade of life, and there is a gender predilection with a female/male ratio of 2 to 3:1 [4–45]. The clinical presentation is almost always in a bilateral, symmetric pattern. The lesions are almost always seen at the buccal mucosa, and other sites including the gingiva, tongue, and lip mucosa may also be affected. Clinical features of OLP range from asymptomatic reticular white lesions in atrophic mucosa, to erosive-ulcerative areas accompanied by pain and discomfort, while the most characteristic feature is the presence of a lace-like network of fine white lines.

One of the most important issues concerning OLP is the question of its potential for malignant transformation into oral squamous cell carcinoma (OSCC). This controversial issue includes diagnostic criteria of OLP that require further discussion. In this paper, differential diagnosis and malignant transformation of OLP are reviewed.

2. Etiopathogenesis

2.1. Cell-mediated immunity

Although the exact etiology of OLP remains uncertain, cumulative evidence suggests that cell-mediated immunity plays a major role in the pathogenesis of OLP [3,7,46–56]. An immunological process is believed to be triggered by an antigen that alters the basal keratinocytes of the oral mucosa. Keratinocyte antigen expression is induced by systemic drugs, contact allergen in dental restorative materials, mechanical trauma, bacterial or viral infection, or unidentified agents. Cytotoxic $CD8^+$ T lymphocytes induce keratinocyte apoptosis through immunoreactions triggered by one or more antigens associated with major histocompatibility complex (MHC) class I on basal keratinocytes [46–49]. The activated $CD8^+$ T cells secrete tumor necrosis factor (TNF)-alpha, which binds to the TNF-alpha receptor on keratinocytes, and then keratinocyte apoptosis occurs via the caspase cascade pathways [49–52]. Helper $CD4^+$ T lymphocytes, which are activated by MHC class II associated with Langerhans cells and keratinocytes, promote the cytotoxicity of $CD8^+$ T lymphocytes through various cytokines including interleukin (IL)-2, IL-12, and interferon gamma [3,47,53].

Mast cells and antigen-presenting Langerhans cells are also involved in the local response. Activated chymase released by degranulation of mast cells acts as a matrix metalloproteinase which degrades the extracellular matrix of basement membrane and contributes to the migration of lymphocytes to the connective tissues underneath the epithelial layer in OLP [54–56].

2.2. Association with hepatitis C virus

Some reports have suggested a possible association between OLP and viral infections, such as herpes simplex virus, Epstein–Barr virus, human papilloma virus [59,60], and hepatitis C virus (HCV) [61–77]. The most extensively studied virus is HCV, but its association with OLP remains controversial. High prevalence rates of HCV infection in patients with OLP have been demonstrated in certain populations, mainly in the Mediterranean [61–63] and Asia [64–66], while this association between OLP and HCV is not found in other areas, such as Northern Europe [67–70], suggesting geographic heterogeneity [71]. One explanation for the geographic differences may be genetic predisposition. For example, a higher frequency of the class II MHC allele, DR6, has been reported in Italian OLP patients with HCV compared with those without HCV [72,73]. Contrary to expectations, a low incidence of OLP in an area of southern Italy where HCV infection is hyperendemic has been also reported [74].

A pathogenic role of HCV infection in OLP is still uncertain. Detection of HCV RNA in the mucosal lesions of patients with OLP [75,76], and the presence of HCV-specific $CD4^+$ and $CD8^+$ T lymphocytes in OLP lesions [77] suggest that epithelial cells expressing HCV antigens may be targets for the immunopathogenesis of OLP. Another relevant issue is that OLP can be induced and/or aggravated by antiviral treatment with either interferon-alpha or interferon-alpha/ribavirin for HCV infection [78]. Additional reports indicate an association between OLP and liver diseases in the absence of HCV infection [79].

Further investigations taking into account factors including HCV genotype, race, area, age, gender, treatment (before or after), and accessory co-infections such as candidiasis, are required to clarify the role of HCV in OLP pathogenesis.

3. Clinical features

Clinically, OLP has specific and clearly identifiable features [3–10]. OLPs are a mixture of white and red lesions that usually exhibit multiple foci and almost always a bilateral symmetric pattern. The most common site affected is the buccal mucosa, and some cases involve other oral mucosal sites such as the tongue, gingivae, and lower lip (in decreasing order of frequency). Lesions on palate, oral floor, and upper lip are not common.

White lesions have a reticular, papule, plaque-like appearance, and red lesions can appear atrophic (erythematous), erosive (ulcerated), or bullous-like. OLP can be divided into the aforementioned six types (reticular, papule, plaque, atrophic, erosive, and bullous types), or two types, white and red, while it is most commonly classified into three types, reticular, atrophic, and erosive (Fig. 1A–C). Lesions are not homogenous and some cases may present as a mixture of these clinical subtypes. White lesions generally form on a diffuse erythematous background. Reticular form, which is the most common type and a characteristic feature of OLP, shows a lace-like network of fine white lines (known as Wickham's striae). Plaque forms appear as homogenous white patches resembling leukoplakia. This form is often observed in the dorsum of the tongue and the buccal mucosa. The presence of striation in plaque forms may help to distinguish them from leukoplakia. The papular form consists of pinpoint white lesions, and is rarely seen.

The erosive form is the next most common type, and is also a significant one for OLP. This form presents as atrophic and erythematous areas with partial ulceration, which are often surrounded by fine white lines. When erosion is severe, the epithelium ruptures as in the case of benign mucous membrane pemphigoid. This type, known as bullous form, is very rare. Atrophic form appears as a diffuse red lesion with mucosal atrophy. Symptoms of burning or painful etching sensation are commonly associated with red lesions including atrophic (erythematous) and erosive (ulcerated) types.

If erosive forms of OLP are confined to the gingival mucosa, the condition is usually referred to as desquamative gingivitis [45,46,57,58]. Such cases should be biopsied to distinguish them from benign mucous membrane pemphigoid, pemphigus vulgaris, and other malignancies.

The World Health Organization (WHO) devised a set of diagnostic criteria for OLP in 1978 (Table 1) [2] that was revised in 2003 (Table 2) [10]. The modified WHO diagnostic criteria involve differentiation between OLP and OLLs. In these modified WHO criteria, the essential clinical feature of OLP is defined to be the presence of bilateral lesions that exhibit a lace-like network of white lines (reticular pattern), but not of plaque, atrophic, erosive, and bullous lesions. When the bilateral reticular lesion is absent, then, it is designated as "clinically compatible with OLP".

Fig. 1. Clinical appearance of oral lichen planus and oral lichenoid lesion. (A) Reticular pattern showing a lace-like network of fine white lines. White patches are partly seen. (B) Erosive pattern showing erythematous area with partial ulceration. (C) White reticular lesions are formed on diffuse erythematous background. (D) Oral lichenoid lesion showing ulcerations surrounded by fine white lines is solitary and located at buccal mucosa adjacent to bridge, suggestive of contact allergy to dental materials.

4. Histopathologic features

The histopathology of OLP was first described by Dubreuill in 1906, and in 1972, it was revised by Shklar [11] who described three characteristic features: (1) overlying keratinization; (2) liquefaction degeneration of the basal cell layer; and (3) a dense subepithelial band of lymphocytes (Fig. 2). The 1978 WHO diagnostic criteria [2] supported three findings as follows. (1) Usually the keratinized layers exhibit either hyperparakeratosis or hyperorthokeratosis, often with a thickening of the granular cell layer and a saw-toothed appearance of the rete pegs. The saw-toothed appearance is common in the skin lesions, but less frequent in the oral lesions. The thickness of the epithelium varies, but atrophy is

Table 1
World Health Organization diagnostic criteria of oral lichen planus (1978).

Clinical criteria
Presence of white papule, reticular, annular, plaque-type lesions, gray-white lines radiating from the papules
Presence of a lace-like network of slightly raised gray-white lines (reticular pattern)
Presence of atrophic lesions with or without erosion, may also be bullae
Histopathologic criteria
Presence of thickened ortho- or para-keratinized layer in sites normally keratinized, and if site normally nonkeratinized this layer may be very thin
Presence of Civatte bodies in basal layer, epithelium, and superficial part of the connective tissue
Presence of a well-defined band-like zone of cellular infiltration that is confined to the superficial part of the connective tissue, consisting mainly of lymphocytes
Signs of 'liquefaction degeneration' in the basal cell layer

Data from Kramer et al. [2] with permission.

Table 2
Modified World Health Organization diagnostic criteria of OLP and OLL (2003).

Clinical criteria
Presence of bilateral, more or less symmetrical lesions
Presence of a lace-like network of slightly raised gray-white lines (reticular pattern)
Erosive, atrophic, bullous, and plaque-type lesions are accepted only as a subtype in the presence of reticular lesions elsewhere in the oral mucosa
In all other lesions that resemble OLP but do not complete the aforementioned criteria, the term "clinically compatible with" should be used
Histopathologic criteria
Presence of a well-defined band-like zone of cellular infiltration that is confined to the superficial part of the connective tissue, consisting mainly of lymphocytes
Signs of liquefaction degeneration in the basal cell layer
Absence of epithelial dysplasia
When the histopathologic features are less obvious, the term "histopathologically compatible with" should be used
Final diagnosis OLP or OLL
To achieve a final diagnosis, clinical as well as histopathologic criteria should be included
OLP: A diagnosis of OLP requires fulfillment of both clinical and histopathologic criteria
OLL: The term OLL will be used under the following conditions:
1. Clinically typical of OLP but histopathologically only compatible with OLP
2. Histopathologically typical of OLP but clinically only compatible with OLP
3. Clinically compatible with OLP and histopathologically compatible with OLP

Data from van der Meiji et al. [10] with permission.
OLP, oral lichen planus; OLLs, oral lichenoid lesions.

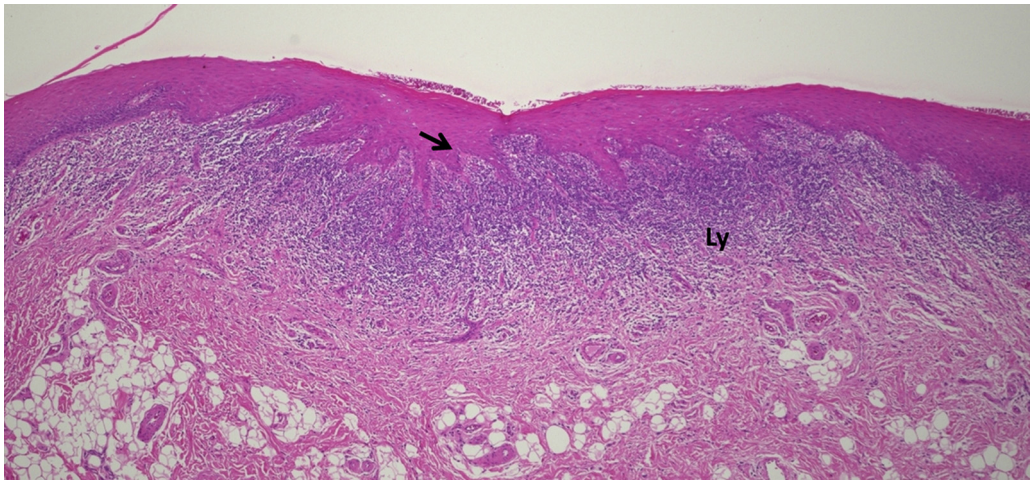

Fig. 2. Histology of oral lichen planus. Lesion shows typical histology of oral lichen planus: e.g. hyperkeratosis with a saw-toothed rete pegs, liquefaction degeneration (arrow) of the basal cell layer, and a dense subepithelial band of lymphocytes (Ly).

often seen and erosive epithelium is evident in some cases. (2) Liquefaction degeneration of the basal cell layer may often be replaced by an eosinophilic band. (3) A dense, band-like lymphocyte infiltration in the superficial part of the lamina propria and close to the epithelium is composed largely of T cells. The presence of B cells is uncommon. Another key feature of OLP is the presence of Civatte (colloid) bodies containing one or more pyknotic nuclear fragments in shrunken epithelial cells in the region of the basal cell layer.

These aspects of OLP are similar to OLLs. The WHO criteria for histopathologic diagnosis of OLP in 1978 did not describe the difference between OLP and OLLs. Eisenberg [9] has proposed a set of essential and exclusionary histopathologic features of OLP. The essential criteria are (a) basal cell liquefaction, (b) band-like lymphocytic infiltrate at the epithelial-stromal junction, with obfuscation of the basal cell region, and (c) a normal epithelial maturation pattern. Atypical cytomorphologies (suggestive of epithelial dysplasia) including nucleus enlargement or hyperchromasia, prevalent dyskeratosis, and increased mitotic figures, are excluded from OLP diagnostic features. Heterogeneous population of inflammatory infiltrate, deeper submucosal extension of infiltrate beyond superficial stroma, and perivascular infiltration indicate lichenoid infiltrate, rather than OLP.

A definitive diagnosis of OLP cannot be made on histopathologic findings only, but also requires clinical findings, and thus the modified WHO diagnostic criteria for OLP in 2003 proposes fulfillment of both clinical and histopathologic criteria (Table 2) [10].

5. OLP and OLLs

Various lesions resemble OLP clinically and histologically, and these are widely referred to as OLLs. OLLs can be classified into four types; (1) contact hypersensitivity to dental materials, such as amalgam restorations, (2) drug-induced lichenoid lesions, (3) lichenoid reactions in chronic graft-versus-host disease (GVHD), and (4) other lesions that are unclassified (Table 3) [4,80].

5.1. Dental material-induced lichenoid lesions

Various kinds of dental materials, such as amalgam, metals, composite and resin-based materials are topographically associated with lichenoid reactions in oral mucosa (Fig. 1D) [4]. In most cases these contact allergies are due to a type IV/delayed hypersensitivity reaction. A patch test using the suspected materials is helpful for diagnosis.

Table 3
Classification of oral lichenoid lesions.

(1) Dental material associated OLLs	Dental amalgam Resin-based materials Metals
(2) Drug-induced OLLs	NSAIDs Antihypertensive agents (e.g. ACE inhibitors) Dapsone Diuretics Oral hypoglycemic agents Gold salts Penicillamine
(3) Chronic graft-versus-host disease	
(4) Unclassified OLLs	

NSAIDs, non-steroidal anti-inflammatory drugs; ACE, angiotensin-converting enzyme; OLLs, oral lichenoid lesions.

5.2. Drug-induced lichenoid lesions

Certain medications, such as beta blockers, non-steroidal anti-inflammatory drugs (NSAIDs), antihypertensive agents (e.g. angiotensin-converting enzyme inhibitors), dapsone, diuretics, oral hypoglycemic agents, gold salts, and penicillamine have been reported to induce oral lichenoid reactions [4,81,82]. In some cases, it may be difficult to distinguish drug-related OLLs from OLP, clinically. Drug-related OLLs often involve the lip and exhibit a symmetric distribution. Skin eruption may suggest a drug-related lesion. Drug-related OLLs may resolve rapidly when the offending drug is eliminated.

5.3. Oral lichenoid reactions in chronic GVHD

Oral lichenoid reactions in chronic GVHD that occur after allogeneic bone marrow transplantation are well recognized [83–85]. Chronic GVHD is associated with lichenoid reactions that affect both the skin, and mucus membranes. Intraoral lichenoid lesions are similar to OLP, but tend to affect entire areas such as the buccal mucosa, tongue, lips, and gingivae. Patients complain of a burning sensation of the oral mucosa. Chronic GVHD often involves salivary and lacrimal glands, and thus xerostomia is a common complaint. In some cases, pyogenic granuloma is seen on the tongue.

Table 4
Studies on the possible malignant transformation of oral lichen planus (1970–2013).

Authors	Year	Country	No. of cases	No. of MT cases (%)	Mean follow-up (years)
Shklar [11]	1972	USA	600	3 (0.5%)	
Fulling [12]	1973	Denmark	225	1 (0.4%)	3.6
Kovesi and Banoczy [13]	1973	Hungary	274	1 (0.4%)	
Silverman et al. [14]	1985	USA	570	7 (1.2%)	5.6
Murti et al. [15]	1986	India	702	3 (0.4%)	5.1
Holmstrup et al. [16]	1988	Denmark	611	9 (1.5%)	7.5
Salem [17]	1989	Saudi Arabia	72	4 (5.6%)	3.2
Silverman et al. [18]	1991	USA	214	5 (2.3%)	7.5
Sigurgeirsson and Lindelöf [19]	1991	Sweden	2071	8 (0.4%)	9.9
Voûte et al. [20]	1992	The Netherlands	113	3 (2.7%)	7.8
Barnard et al. [21]	1993	UK	241	8 (3.3%)	
Moncarz et al. [22]	1993	Israel	280	6 (2.1%)	1.5
Gorsky et al. [23]	1996	Israel	157	2 (1.3%)	4.8
Markopoulos et al. [24]	1997	Greece	326	4 (1.3%)	6.1
Silverman and Bahl [25]	1997	USA	95	3 (3.2%)	5.7
Lo Muzio et al. [26]	1998	Italy	263	13 (4.9%)	11.0
Rajentheran et al. [27]	1999	UK	832	7 (0.8%)	6.0
Mignogna et al. [28]	2001	Italy	502	18 (3.7%)	
Chainani-Wu et al. [29]	2001	USA	229	4 (1.7%)	4.5
Eisen [30]	2002	USA	723	6 (0.8%)	
Lanfranchi et al. [31]	2003	Argentina	719	32 (4.5%)	4.9
Gandolfo et al. [32]	2004	Italy	402	9 (2.2%) HCV infected	6.8
Rödström et al. [33]	2004	Sweden	1028	5 (0.5%)	
Xue et al. [34]	2005	China	674	4 (0.6%)	4.3
Laeijendecker et al. [35]	2005	The Netherlands	200	3 (1.5%)	
Bornstein et al. [36]	2006	Switzerland	145	1 [OLP] 3 [OLL]	4.8
Ingafou et al. [37]	2006	UK	690	13 (1.9%)	8.5
van der Meij et al. [38]	2007	The Netherlands	67 [OLP] 192 [OLL]	0 (0%) [OLP] 4 (2.0%) [OLL]	 10.2
Carbone et al. [39]	2009	Italy	808	15 (1.85%)	
Pakfetrat et al. [40]	2009	Iran	420	3 [OLL?] mild dysplasia	
Bermejo-Fenoll et al. [41]	2010	Spain	550	8 (0.9%)	
Bombeccari et al. [42]	2011	Italy	327	8 (2.4%)	
Shen et al. [43]	2012	China	518	5 (0.96%)	
Tovaru et al. [44]	2013	Romania	633	6 (0.95%)	
Gumru et al. [45]	2013	Turkey	370	1 (0.27%) developed 2y later	

Older reports were cited by van der Meij et al. [38] with permission.
MT, malignant transformation; HCV, hepatitis C virus; OLP, oral lichen planus; OLL, oral lichenoid lesion.

5.4. Unclassified OLLs

There are other lesions that have OLP-like features but cannot be classified via the aforementioned three types of OLLs. Waal [80] described lesions that had lichen planus-like characteristics but lacked one or more of the typical features, such as bilateral presentation. These unclassified OLLs include those with erythematous changes limited to the gingiva, without signs of "true" OLP elsewhere in the oral cavity. Such lesions may be identical to desquamative gingivitis [46–49].

Eisenberg [9] has discussed other OLLs, such as nonspecific lichenoid stomatitis, atypical lichenoid stomatitis, and lichenoid dysplasia. The term "lichenoid dysplasia" was coined by Krutchkoff and Eisenberg [86] to describe lesions that resemble OLP clinically and histologically, but also show epithelial dysplasia. Eisenberg [9] later suggested that this term should be avoided, as it creates confusion, and dysplastic OLP is best allocated to the category "other dysplastic conditions".

6. Malignant transformation of OLP

One of the most important issues concerning OLP is its potential for malignant transformation into OSCC. Although the WHO has categorized OLP as a precancerous condition [2], the risk of malignant transformation of OLP remains a subject of debate in the literature. Some authors accept the possible malignant potential of OLP, while others oppose this suggestion. Krutchkoff et al. [87] reviewed reports published from 1950 to 1978 evaluating the premalignant potential of OLP, but did not find sufficient documented evidence to confidently support the contention that OLP represents a premalignant condition. A major problem in this regard was the lack of universally accepted specific diagnostic criteria for OLP. Critics have pointed out that some cases of OLP that progressed to OSCC were misdiagnosed as OLP from the beginning, and that lichenoid lesions presenting dysplasia via biopsy should be excluded from the diagnosis of OLP. Due to a lack of sufficient data to support the initial diagnosis of OLP in patients who ultimately developed OSCC, modifications have been proposed to the WHO criteria published in 2003 [10]. Five-year follow-up of 192 patients with OLLs and 67 patients with OLP, selected using the modified WHO criteria, demonstrated development of OSCC in 4 cases of OLLs, and no cases of OLP, suggesting malignant potential of OLLs, but not OLP [38]. van der Meij et al. [38] reported that by applying strict clinical and histological diagnostic modified WHO criteria, they were able to identify a subgroup of OLL patients with high malignant potential. Recently, most follow-up studies have applied strict clinical and histological diagnostic criteria, and some of these have suggested malignant potential of OLP [28–35,39,41–45]. A rigorously conducted 4.5-year follow-up study of 723 cases found malignant transformation of 6 (0.8%) cases [30]. A Northern Italian cohort study of 402 OLP cases, which had been selected based on strict clinical and histological diagnostic criteria, showed that 9 cases developed an OSCC during a 4.9 year follow-up [32]. A study of 145 patients deemed to have OLP, but not via strict diagnostic criteria, reported malignant transformation in 4 cases, of which 3 had dysplasia at the initial diagnosis [36]. Based on recent

reports (Table 4), the overall malignant transformation rate of OLP is estimated to be 1–2%, and higher rates of transformation in Italian reports may be due to a high prevalence of HCV infection [39,42].

The preferential sites of OSCC which develops from OLP lesions are the tongue and buccal mucosa, and the incidence is higher in the former than the latter [11–42,87], while epithelial dysplasia in OLP is more prevalent in the buccal mucosa [86]. Interestingly, in some cases OSCC has reportedly arisen from the plaque form of OLP on the dorsum of the tongue [88], which is a rare location for OSCC, although most cases of OSCC associated with OLP are found on the lateral side of the tongue [11–42], as is common of OSCC [1]. Smoking and alcohol use are evidently not risk factors for OSCC development in patients with OLP [89]. The red lesions, such as erosive and atrophic forms of OLP, may tend to progress to OSCC [4–6,11–46]. Erosive and atrophic forms of OLP are associated with HCV infection [39,42].

It is uncertain what mechanisms could cause malignant transformation of OLP. A cytokine-based microenvironment arising from chronic inflammation of OLP may induce genetic alterations of epithelial cells to progress to malignancy [90]. Such alterations include increased loss of heterozygosity (LOH) at tumor suppressor gene loci, increased DNA content, and occurrence of aneuploidy [91–95]. Expression of apoptosis- and cell cycle-regulating proteins such as p53 protein, p21 protein, p16 protein, bcl-2, and bax is also altered in the transformation process [96–100]. These molecular changes may be useful in further understanding malignant processes associated with OLP.

7. Perspectives

Epithelial dysplasia is considered to be a risk factor for malignant transformation into OSCC. A conception that OLP and lichenoid dysplasia should be considered to be different entities is evidently widely accepted [4,9,38]. Nevertheless, it would be also likely that "lichenoid dysplasia" (dysplasia observed in OLLs or OLP) is an early stage of malignant transformation pathway from "true" OLP to OSCC, if "true" OLP is able to transform into dysplasia. A series of clinical observations by Mignogna et al. [28,101,102] suggests the latter viewpoint that "true" OLP may have a malignant potential. They performed an extensive retrospective study of a cohort of 45 patients with OLP who subsequently underwent the changes to severe dysplasia and/or OSCC. Of 45 patients with histologically diagnosed OLP without dysplasia at the time of the initial diagnosis, 20 patients subsequently had a single transformation event, and 25 had multiple transformation events including multifocal dysplasia and/or malignancy. Their results suggest that not only is OLP itself a risk factor for malignant transformation, but that there may also be field cancerization in OLP [102].

Although the incidence of malignant transformation of OLP remains controversial, careful, regular, and long-term follow-up of patients with OLP is required for the early detection of malignant transformation from OLP. The follow-up interval ranges from 2 months to annually. Patients with the reticular form of OLP may be assessed annually, while OLP with dysplasia should be examined more frequently, e.g. every 2–3 months [28,102]. If erosive changes are evident in lesions at follow-up visits, additional biopsies are mandatory and the follow-up intervals should be shortened.

A prospective, long-term, follow-up study with strict diagnostic criteria will be required to clarify the malignant potential of OLP.

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